*Dev Notes - BME 09/2025: Tessara*

**Type:** Monthly Prototype | **Focus:** Character Movement/Procedural Generation | **Engine:** Unity | **Time Worked:**6/30 days

When developing this game, I wanted to focus mainly on making sure all the game mechanics I wanted to add were working before diving into procedural generation.  I have had many things that I need to continue to improve for each of them. For procedural generation, there are many different pieces that I need to research to fully understand how it works and what I need to do to fully understand it.

**Goals & Completions:**

* Create a 2D level with basic movements for jumping **(DONE)**
* Create a 2D level with basic movements for crawling/crouching **(PARTIALLY COMPLETED)**
* Create a 2D level with basic movements for swimming **(NOT STARTED)**
* Create a 2D level with basic movements for double jumping **(NOT STARTED)**
* Get Movement working correctly for each system **(PARTIALLY COMPLETED)**
  + Jumping **(PARTIALLY COMPLETED)**
  + Crawling/Crouching **(COMPLETED)**
  + Swimming **(NOT STARTED)**
  + Double jumping **(NOT STARTED)**
* Create Procedural process to generate random level based on seed **(PARTIALLY COMPLETED)**
* Ability to view level as a Map. **(NOT STARTED)**

**Things I learned:**

* **Unity New Input System:** Figuring out the new input system for unity changes the way interactions with the keyboard/controller happen with the Unity project. Having to define everything as an event keeps things more consistent but also has a bit of a learning curve to make sure your events are handled appropriately in code.
* **Multiple Hitboxes:** Crawling/crouching had multiple issues when trying to develop but having multiple hitboxes that allowed part of the player to start crawling but not “stand up” when you would not normally be able to. This could be changed with an addition of state machines to make sure the character is in a certain state, but with that there still needs to be a situation where the player cannot “stand up” when they are not supposed to.

**Areas for Improvement:**

* **Jumping:** Jumping works and there are limits to how many times you can jump, but the feeling when jumping is heavy and can use some improvement.
* **Area Design:** Initial level design is good but can use some improvement to allow a better feeling of when moving through the level.

**Known Bugs:**

* **Jumping:** Jumping can be done indefinitely if you jump against a wall.
* **Jumping:** Jumping was not adjusted to allow DeltaTime to take affect when trying to jump. This can cause different jump heights based on FPS.
* **Jumping:** The indefinite wall jump keeps adding the jump power when jumping allowing for exponential speed when jumping.